REMARKS

Claims 1 - 8 and 10 - 13 are pending in the present Application. Claims 14 - 19 have been withdrawn from consideration. No claims have been amended leaving Claims 1 - 8 and 10 - 13 for consideration upon entry of the present Amendment. Support for the amendment can be found in at least Example 1 of the present application. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 102(b) or § 103(a)

Claims 1 - 8, 10 and 13 stand rejected under 35 U.S.C. § 102(b), as allegedly being anticipated by U.S. Patent No. 6,388,046 to Campbell et al. (Campbell) (Office Action dated 10/12/2006, page 3)

To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987).

In making the rejection, the Examiner has stated that "[I]n the alternative that the disclosure by Campbell be insufficient to arrive at the limitations of the instant claims by the applicants, it would have been obvious to optimize the process conditions including viscosity with reasonable expectation of success, because the prior art is concerned about reducing the viscosity and teaches the benefits of reduced viscosity with improved processability." (Office Action dated 10/12/2006, page 4) Applicants respectfully disagree with the rejection under 35 U.S.C. § 102(b) or in the alternative under § 103(a). Applicants respectfully disagree on the grounds that Campbell does not teach the invention with any particular degree of specificity.

The present application is directed to a method for manufacturing a composition comprising blending a polymeric resin, carbon nanotubes and a plasticizer at a viscosity effective to maintain the ratio of resistivity in the direction parallel to a flow direction to that in the direction perpendicular to the flow direction to be greater than or equal to about 0.15; wherein the blending involves heating the polymeric resin to a temperature greater than its glass transition temperature or to a temperature greater than its melting temperature.

Campbell teaches resin compositions comprising a thermoplastic resin and at least one phosphoramide having a glass transition temperature of at least 0°C. (see abstract) Campbell teaches that viscosity modifying agents can be added to the thermoplastic resin. (see Col. 5, lines 50 – 53;

see too Col. 6, line 31 – Col. 15, line 25) Campbell provides a laundry list of additives as shown below:

> The compositions of the invention may also contain other conventional additives including antistatic agents, stabilizers such as heat stabilizers and light stabilizers, inhibitors, plasticizers, flow promoters, fillers, mold release agents, impact modifiers, and anti-drip agents. The latter are illustrated by tetrafluoroethylene polymers or copolymers, including mixtures with such other polymers as polystyrene-co-acrylonitrile (sometimes referred to herein as styrene-acrylonitrile copolymer). Representative examples of fillers include glass fibers, carbon fibers, carbon nanotubes, carbon black, mica, clay, nanoclay, barium sulfate, antimony oxide, titanium dioxide, wollastonite, silica, and talc. Representative examples of mold release agents include pentaerythritol tetrastearate, octyl behenate, and polyethylene. Representative examples of impact modifiers include polybutene and core-shell materials such as poly(methyl methacrylate)-co-poly(butyl acrylate)-co-poly(dimethylsiloxane). In certain embodiments of the invention preferred additives include low molecular weight hydrocarbons with molecular weight between about 500 and 1000 such as ARKON available from Arakawa Chemical USA, and terpenephenols.

(Col. 15, lines 1 – 16)

While the laundry list shown above contains electrically conductive fillers, Campbell does not teach electrically conductive compositions. More specifically, Campbell does not teach either an upper or a lower limit for its additives. The Examiner has conveniently pointed out a value of 2.75 parts as the amount of additive present. (see office action dated 10/12/2006, page 3, lines 6 – 7) The additives added at 2.75 parts were however titanium dioxide and polytetrafluoroethylene, both of which are electrically insulating. (see Example 7) A further review of the Examples shows that Campbell has used additives such as polytetrafluoroethylene in an amount of 0.4 parts (see Example 1) to glass fibers at 20 parts (see Example 12). The large list of additives (most of which are not electrically conductive and some of those that are electrically conductive such as carbon black will not even show the claimed effect) along with the large ranges for the amounts of additives that can be added clearly indicate that Campbell cannot anticipate the claimed invention within the meaning of 35 U.S.C. § 102. In addition, the list of additives disclosed by Campbell contains a large number

of low aspect ratio fillers, which the presently claimed method of processing would have no effect upon.

Since Campbell does not explicitly teach carbon nanotubes and does not teach any examples with a suitable range of electrically conductive filler where the claimed effect can be observed, it cannot anticipate the claimed invention.

In this regard, the courts have held that "[A] reference must provide a disclosure with "sufficient specificity" to constitute a description of the claimed composition within the purview of 35 U.S.C. § 102(b)." *See In re Schaumann*, 572 F.2d 312, 315, 197 USPQ 5, 8 (CCPA 1978).

Applicants therefore respectfully request a withdrawal of the anticipation rejection against Claims 1-8, 10 and 13, because Campbell lacks sufficient specificity to constitute a description of the claimed composition within the purview of 35 U.S.C. § 102(b).

With regard to the alternative rejection under 35 U.S.C. § 103(a), one of ordinary skill in the art upon reading Campbell would not be appraised of the synergistic results obtained with the aspect ratio of the carbon nanotubes and the lowered viscosity of the polymeric resin. Campbell does not disclose any effect of the lowered viscosity on the dispersion of the filler. This has been acknowledged by the Examiner. (Office Action dated 10/12/2006, page 3) Even where Campbell experiments with high aspect ratio fillers (e.g., glass fibers in Example 12, Table 5), it does not describe the preservation of aspect ratio, which in turn leads to the claimed property of a resistivity ratio of greater than or equal to about 0.15. In addition, there is no indication that the reduced viscosity described by Campbell would be adequate to preserve the aspect ratio in the glass fibers described in Campbell.

Since Campbell does not teach a synergy between the low viscosity and the preservation of aspect ratio of carbon nanotubes, one of ordinary skill in the art upon reading Campbell would not be motivated to try the carbon nanotubes from the large list of additives provided by Campbell in a low viscosity composition. In addition, since Campbell provides no guidance as to the quantity of conductive filler required to produce an electrically conductive composition, one of ordinary skill would not be able to estimate the amount of carbon nanotubes that must be used in order to arrive at the claimed properties.

Finally, one of ordinary skill in the art would not be appraised as to any expectation of success upon reading Campbell. As can be seen in the Examples 1 and 2 of the present application, the addition of a low viscosity additive not only produces lower levels of electrical resistivity, but also homogenizes the electrical resistivity across the length and breadth of the composition. This result is unexpected. In this regard, the courts have held that "[A]n applicant can rebut a prima facie case of obviousness by presenting comparative test data showing that the claimed invention possesses unexpectedly improved properties or properties that the prior art does not have." *In re Dillon*, 919 F.2d 688, 692-93, 16 U.S.P.Q.2d 1987, 1901 (Fed. Cir. 1990).

Applicants believe that the Examiner has not made a prima facie case of obviousness over Campbell and therefore respectfully request a withdrawal of the rejection and an allowance of the claimed invention.

Claims 11 and 12 stand rejected under 35 U.S.C. § 102(b) or in the alternative under 35 U.S.C. § 103(a), as allegedly being anticipated by Campbell. (Office Action dated 10/12/2006, page 4) Applicants respectfully traverse this rejection for the reasons explained above notably that Campbell does not teach the claimed invention with any specificity. While Campbell teaches enhanced processability based upon the reduced viscosity, it does not teach a product containing carbon nanotubes that displays a uniformity of electrical properties in all directions. As noted above, the Examples of Campbell use glass fibers that have macroscopic dimensions as opposed to carbon nanotubes that have diameters in the nanometer range. For these reasons, it is believed that the examples of Campbell that the Examiner has relied upon will not produce the claimed invention. Campbell therefore cannot anticipate the claimed invention and does not render it obvious either.

Claim 13 is rejected under 35 U.S.C. § 102(b) or in the alternative under 35 U.S.C. § 103(a), as allegedly being anticipated by U.S. Patent No. 5,445,327 to Creehan (Office Action dated 10/12/2006, page 4)

Creehan teaches a compounding process for preparing a composite that includes introducing one or more fillers and a matrix material into a stirred ball mill and subjecting the fillers and the matrix material to a combination of shear and impact forces under reaction conditions including

reaction time sufficient to reduce the size of agglomerates formed by the fillers to a value below a pre-determined value to disperse the fillers throughout the matrix material. (see Abstract) Creehan does not teach melt blending or heating the matrix material above its glass transition temperature as is presently claimed. In its example (see Table 1), Creehan uses dry ice to embrittle the material. (Col. 4, lines 5 – 8) For this reason at least Creehan cannot anticipate the claimed invention.

Since Creehan does not teach all elements of the claimed invention, the Examiner has not made a prima facie case of obviousness over Creehan. Applicants therefore respectfully request a withdrawal of the rejection and an allowance of the claimed invention.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the rejections and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 50-1131.

Respectfully submitted,

CANTOR COLBURN LLP

By_____

David E. Rodrigues
Registration No. 50,604

Date: March 13, 2007
CANTOR COLBURN LLP
55 Griffin Road South
Bloomfield, CT 06002
Telephone (860) 286-2929
Facsimile (860) 286-0115
Customer No.: 23413